

Case No.: AMKOR-019RCE
Patent Appln. 09/436,158

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Erasmo Perez

Serial No.: 09/436,158

Filed: Nov. 09, 1999

For: SEMICONDUCTOR PACKAGE WITH
EXPOSED DIE PAD AND BODY-
LOCKING LEADFRAME

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) Group No.: 2814
)

) Examiner: Ha, Nathan W
)
)

RESPONSE TO OFFICE ACTION

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON D C 20231

Dear Sir/Madam:

The following remarks are responsive to the Office Action mailed May 17, 2002, in relation to the above-identified patent application. In that Office Action, the Examiner rejected Claims 13-14, 17-18, 20-33 and 34-45 under 35 U.S.C. §102(a) as being anticipated by Okumura et al. (US. 6,130,115) and has rejected Claims 15-16 and 19 under 35 U.S.C. §103(a) as being unpatentable over Okumura et al. in view of Yagi et al. (US. 6,025,640). Claim 29 was cancelled

and the remaining claims are respectfully

Respectfully,
Erasmo Perez

As a preliminary matter, Applicant notes that the May 17, 2002 Office Action was sent to [redacted]. Resubmitted herewith for the Examiner's consideration are the Power of

Attorney transfer documents which were originally forwarded to the Examiner via facsimile on March 25, 2002. Applicant respectfully requests consideration of these documents, and the appropriate change of the correspondence routing to the undersigned.

Rejections under 35 U.S.C. 102(a)

Claims 13-14, 17-18, 20-33 and 34-45 are rejected under 35 U.S.C. 102(a) as being anticipated by Okumura et al. (US. 6,130,115, previously cited.)

Applicant respectfully submits that independent Claim 13 is not anticipated by the Okumura et al. reference. Independent Claim 13 of the present application describes a semiconductor device having a plurality of leads, each of which includes a locking pad and a wire bonding pad having a rounded or **spatulate** shape (as shown in Figures 3, 4, and 5 of the present application and indicated by the reference numerals 40 and 42, respectively). The spatulate shape of the locking pad and wire bonding pad of each lead causes both the **locking pad width and the bonding pad width to exceed the lead width**, thus enabling the lead to be made with a relatively thin lead width to enhance the integration of the semiconductor. No embodiment of the semiconductor device disclosed in the Okumura et al. reference includes any locking pad or wire bonding pad having a **spatulate** shape causing the locking pad width and the bonding pad width to exceed the lead width. The actual teachings of the Okumura et al. reference as they pertain to the structural attributes of the leads included in the various embodiments of the semiconductor device described therein are set forth with particularity in Applicant's April 15, 2002 Amendment. If the Examiner is unable to find in the Okumura et al. reference any teaching of a locking pad and wire bonding pad having a spatulate shape causing the locking pad width and the bonding pad width to exceed the lead width, the Examiner designate with particularity those portions of the leads of the various embodiments

described in the Okumura et al. reference which satisfy these particular limitations in accordance with 37 C.F.R. §1.104(c)(2).

The Okumura et al. reference additionally fails to disclose a recessed shoulder on the lower surface of the die pad extending around the central portion thereof, as is disclosed by Claim 13 of the present application and as is clearly shown by Figure 7 thereof (indicated by the reference numeral 44). Referring to Figure 7(a) of the Okumura et al. reference (referred to by the Examiner in the Office Action), a die pad 11 is shown having ends bent downward to form stepped portions 17. Thus, the flat lower surface of the die pad 11 is recessed from the support pins 10, leads 13, and terminal portions 16 of the leads 13. However, the lower surface of the die pad 11 disclosed in the Okumura et al. reference does not itself include an indentation or recessed shoulder.

Due to the foregoing, Applicant respectfully submits that Claim 13 is in condition for allowance. Claims 14, 17-19, 20, 34 and 35 are believed to be in condition for allowance as being dependent on an allowable base claim.

Claims 21, 23, 28, and 37 of the present application each describe one or more spatulate pads formed into at least one of the leads. As discussed above, Okumura et al. does not disclose any spatulate pads. Further, Claim 21 describes "a disposable frame connected to the leads." Such disposable frame is not taught or suggested in the Okumura et al. reference. Additionally, in the pending claims, "a protective plastic body molded over the leads, the pad, the die, and the

terminal portions of the leads, the die pad, the resistor

Applicant respectfully submits that these features which are used to provide protection from damage by

moisture are not anticipated by Okumura et al., which discloses a package in which the area occupied by the die pad "requires only a small amount of adhesive (col. 9, lines 1-3)," thus reducing the likelihood of the package being cracked "when moisture contained in an adhesive ... expands by evaporation" (col. 8, lines 65-67), rather than a means for resisting penetration of moisture into the package.

Applicant therefore respectfully submits that Claims 21, 23, 28, and 37 are not anticipated by the Okumura et al. reference, and are in condition for allowance. Additionally, Claims 22, 24-27, 30-33, 36, and 38-44 are believed to be in condition for allowance as being dependent on respective allowable base claims.

Rejection Under 35 U.S.C. 103(a)

Claims 15-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. as applied to claim 13 above, and further in view of Yagi et al. (US 6,025,640).

With regard to Claims 15-16, Applicant respectfully points out that the width and pitch of the leads are not determined simply to meet design criteria, but rather to enhance the reliability of the semiconductor package. Modification of the width and pitch may result in a malfunction such as a short or open circuit of the leads if, for example, an inadequate pitch of the leads causes the leads to overlap. Since neither Okumura et al. nor Yagi et al. teaches or suggests the formation of spatulate locking and wire bonding pads into outer and inner end portions of the leads, the modification in width and pitch of the leads as described in Claims 15 and 16 of the

being dependent on an allowable base claim (Claim 13)

Therefore, Claims 13-28 and 30-45 are believed to be in condition for allowance. An early Notice of Allowance is respectfully solicited. Should the Examiner have any suggestions for expediting allowance of the application, please contact Applicant's representative at the number listed below.

If any additional fee is required, please charge Deposit Account Number 19-4330.

Respectfully submitted,

Date: 8/6/02

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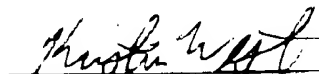
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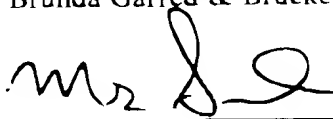
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Date: March 19, 2003

Serial Application No. 08/000,000

Applicant: Erasmo Perez et al

Filed: 11/09/1999

Title: Semiconductor Package with Exposed Die Pad and Body locking
Leadframe

PLEASE HAND DELIVER TO Examiner Nathan Ha

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August 6, 2002

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No. of pages 9

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MAIL ROOM

8/6/02

Patent Application No. 09/045,111

Applicant: Erasmo Perez et al

Filed: 11/09/1999

TITLE: SEMICONDUCTOR PACKAGE WITH EXPOSED DIE PAD AND BODY
DRAWING: LEAD FRAME